

WHAT IS CLAIMED IS:

1. A submerged hollow fiber membrane module, comprising:

[I] two module headers having a filtrate water collecting portion for collecting filtrate water filtered through hollow fiber membranes and a filtrate water outlet;

[II] an air diffusion unit consisting of support tubes fixing the two module headers while keeping them spaced a predetermined distance and air diffusion tubes having air diffusion holes; and

[III] a bundle of hollow fiber membranes having both opposite ends fixed to the insides of the module headers by an adhesive so as to form a water collecting space within the module headers, the ends of the hollow portions of the hollow fiber membranes being opened and disposed in parallel to a filtrate water discharge surface.

2. The module of claim 1, wherein the air diffusion unit includes:

an upper support tube whose opposite ends are connected vertically to the upper ends of the module headers and which has an air injection port;

a lower support tube whose opposite ends are connected vertically to the lower ends of the module headers and which has an air injection port and air diffusion holes; and

two air diffusion tubes which are vertically connected to the

support tubes to be disposed in the bundle of hollow fiber membranes and has air diffusion holes.

3. The module of claim 1 or 2, wherein the distance between the module headers and the air diffusion tubes arranged adjacent thereto is 1 to 20cm.

4. The module of claim 1 or 2, wherein the diameter of the air diffusion holes is 2 to 8mm.

5. The module of claim 1 or 2, wherein the diameter of the air diffusion holes disposed on the air diffusion tubes is increased by 10 to 100% as compared to the air diffusion holes disposed right above as they go toward a lower part of the module.

6. The module of claim 2, wherein the diameter of the diffusion holes of the lower support tube is preferably 1.5 to 2.0 times larger than the diameter of smallest air diffusion holes of the air diffusion tubes.

7. The module of claim 1, wherein the tensile strength of a hollow fiber membrane constituting the bundle of hollow fiber membranes is 1kg/strand or more.

8. The module of claim 1, wherein the hollow fiber membrane constituting the bundle of hollow fiber membranes is a composite hollow fiber membrane reinforced by braid and having a tensile strength greater than 10kg/strand.

9. The module of claim 1, wherein the shape of the module headers is a cylindrical shape or a rectangular shape.

10. The module of claim 1, wherein the air diffusion unit and the module headers are provided with respective connecting members connected for serially coupling two or more submerged hollow fiber membrane modules.

11. The module of claim 10, wherein the connecting members are provided with a path for flowing filtrate water and air between the two module headers and the air diffusion tubes both serially coupled to each other.